

REMARKS

This Application has been carefully reviewed in light of the Office Action mailed July 13, 2005. At the time of the Office Action, Claims 18-28 were pending in this Application. Claims 18-28 were rejected. Claim 18 has been amended to correct a typographical error. Applicants respectfully request reconsideration and favorable action in this case.

Rejections under 35 U.S.C. § 101

Claims 18-28 stand rejected by the Examiner under 35 U.S.C. §101, for failing to support the claimed invention by either a specific asserted utility or a well established utility. Applicants traverse the rejection and submit Claims 18-28 meet the requirements of 35 U.S.C. §101.

The Office Action states that “if the ports are less than four, the 100 Mbps data stream cannot be transmitted.” By this and similar statements, the Office Action seems to be suggesting that: (1) the claims as written describe transferring data at a rate of 100 Mbps over a 25 Mbps port; (2) a received 100 Mbps signal cannot be transmitted as a 25, 50, or 75 Mbps signal; and/or (3) a received 25, 50, or 75 Mbps signal cannot be transmitted as a 100 Mbps signal.

First, the claims do not describe transferring data at a rate of 100 Mbps over a 25 Mbps port. Any recitation in the claims of data being transferred at a rate of 100 Mbps refers to either data transferred over the 100BaseT port or as the combined rate over four 25 Mbps DSL ports. For example, Claim 18 includes “a data splitter adapted to split a received 100 Mbps Ethernet stream.” The structure of the claim and the teachings of the specification make it clear that this stream is received over the 100BaseT port and not any of the one to four 25 Mbps DSL ports. Claim 18 further states: “a data collection and reorganization unit coupled to said one to four DSL ports and adapted to assemble said one to four 25 Mbps downstream signals into a single 100 Mbps Ethernet data stream for transmission by said physical layer module.” The physical layer module is connected to the 100BaseT port as recited earlier in the claim. The 100 Mbps data stream is transmitted over this 100BaseT port and not over any of the individual one to four 25 Mbps DSL ports. Of course, a combined data transfer rate of up to 100 Mbps can be achieved over four 25 Mbps DSL ports, but none

of the individual 25 Mbps DSL ports are transferring data at a rate of 100 Mbps. The remaining claims contain language similar to Claim 18. Therefore, none of the claims describe transferring data at a rate of 100 Mbps over a 25 Mbps port.

Addressing the second issue, a received 100 Mbps signal can be transmitted as a 25, 50, or 75 Mbps signal. Consider an embodiment in which the claimed modem has a single DSL port capable of transmitting data at a rate of 25 Mbps over a copper twisted pair wire. The modem receives data at rate of 100 Mbps over a 100BaseT port, but can only forward this data on at a rate of 25 Mbps. It may take approximately four times longer to transmit than to receive the signal, but the entire signal will be transmitted. For example, in one embodiment described in the specification at page 15, lines 21-27, and claimed in Claim 19, a flow and rate control memory unit may store some of the overflow of received data before it is transmitted. The flow and rate control memory unit does not need to store all of the overflow data. As is well known in data transmission protocols, portions of a data signal may be rebroadcast if no acknowledgement is returned to the sender. In another embodiment of the invention then, when the modem cannot transmit data over the one to four 25 Mbps DSL ports at the same rate the data is received, the modem drops some of the packets without sending acknowledgements to the sender. The sender will then rebroadcast the dropped packets, which the modem will process and transmit as it is able. In this embodiment, the amount of time required to receive the data signal will increase and may approximate the time required to transmit the message over the single 25 Mbps DSL port. However, the received data remains a 100 Mbps signal received over a 100baseT port. In other embodiments these network handshake protocols may make a flow and rate control memory unit unnecessary. These example embodiments demonstrate that a received 100 Mbps signal can be transmitted at a rate of 25, 50, or 75 Mbps according to the claimed invention.

Third, a received 25, 50, or 75 Mbps signal can be transmitted as a 100 Mbps signal. This is not to suggest that the modem of the current invention can transmit data before the modem receives that data. Rather, the data received over the one to four 25 Mbps DSL ports is formatted and transferred as a 100 Mbps signal over a 100BaseT port. For example, in one embodiment the modem receives data over two 25 Mbps DSL ports for a combined data transfer rate of 50 Mbps. As described in the claims, the data from these two ports is assembled by a data collection and reorganization unit into a single data signal. This

assembled data signal is formatted to be transmitted over a 100BaseT port. In this embodiment there may be breaks in the data transfer as the modem waits for the incoming data signal to be received and assembled. However, any data that has been assembled by the modem will be transmitted over this 100BaseT port at a rate of 100 Mbps. In other embodiments received and assembled data is stored in the flow and rate memory control unit, and forwarding of the 100 Mbps signal may begin when part or all of the signal can be transmitted continuously. Other embodiments will be apparent to those skilled in the art. Therefore, a received 25, 50, or 75 Mbps signal can be transmitted as a 100 Mbps signal.

In part because the invention supports these functions, it has a well established utility. As mentioned in the previous Response, since the number of copper twisted pair wires provided in a given infrastructure is restricted, it is useful to have a modem wherein the number of DSL ports and therefore, the number of occupied twisted pair wires is configurable. For instance, when using several modems according to the present invention as claimed, *e.g.*, in Claim 18, a first modem might only have one DSL port to transmit a 25 Mbps data upstream signal and to receive a 25 Mbps downstream signal and another modem according to the present invention might be configured to have four DSL ports to exchange data at the rate of 100 Mbps. In the given example, $4 + 1 = 5$ DSL ports and therefore, five copper twisted pair wires are occupied when the first modem exchanges data at a rate of 25 Mbps and the second modem exchanges data at a rate of 100 Mbps. However, two modems each having four DSL ports running at data rate of 25 Mbps would occupy $2 \times 4 = 8$ copper twisted pair wires. Thus, in some embodiments of the current invention the infrastructure costs associated with data networks may be reduced. It is submitted, for all the reasons stated above, that the subject matter claimed by Claims 18-28 has a well established utility. Applicants respectfully requests withdrawal of the rejection.

Rejections under 35 U.S.C. § 112

Claims 18-28 stand rejected by the Examiner under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Applicants traverse the rejection and submit amended Claims 18-28 are in full compliance with 35 U.S.C. § 112.

The Office Action suggests that the claimed splitter adapted to split a received 100 Mbps signal into one to four 25 Mbps signals and the collection and reorganization unit to

assemble one to four 25 Mbps signals into a single 100 Mbps signal are not described in the specification. The Office Action states that the specification teaches 25 Mbps data transmission if there is one DSL port, 50 Mbps for two DSL ports, 75 Mbps for three DSL ports, and 100 Mbps only if there are four DSL ports. As with the rejection under 35 U.S.C. § 101, the Office Action seems to be arguing, for example, that a 100 Mbps signal cannot be converted into a single 25 Mbps signal, and a 25 Mbps signal cannot be transmitted at 100 Mbps. The arguments of the previous section explain how a 100 Mbps signal can be converted to a single 25 Mbps signal and how a 25 Mbps signal can be converted to a 100 Mbps signal as taught in the specification and claimed in each of the claims. Applicants believe that the specification adequately describes the claimed invention in such a way as to allow one skilled in the art to practice the invention.

Furthermore, and as described in the previous Response, the modems as claimed by pending Independent Claims 18, 23 and 26 are described in detail with respect to Figure 4 of the present application on page 15, line 4 to page 17, line 18 of the original specification. The "data splitter" is labeled "190," the "data collection and reorganization unit" is labeled "192" and the "flow and rate control memory unit" is labeled "189." The technical teachings of the specification enable a person of ordinary skill in the art to make such a modem. As described on page 15 of the present application, the data splitter "190" divides a single data stream into one to four separate output data streams via a technique known as "inverse multiplexing". "Inverse multiplexing" is a known and understood technique for data splitting, for example, "spreading a single high data rate signal over several lower data rate channels to achieve a high data rate at the 100BaseS output." The flow and rate control memory unit 189 soaks differences in transmitting rates between the 100BaseT port and the 100BaseS port. The data collection and reorganization unit 192 receives data from up to four DSL-Ethernet ports via control data lines 204 and assembles the one or more data streams into a single data stream. Applicant submits said technical description is more than sufficient to enable a person of ordinary skill in the art to practice the subject matter of Independent Claims 18, 23, 26, and their dependents. If necessary, Applicants may submit an affidavit attesting to the sufficiency of the disclosure. Applicants respectfully request withdrawal of the rejection.

CONCLUSION

Applicants have now made an earnest effort to place this case in condition for allowance in light of the amendments and remarks set forth above. Applicants respectfully request reconsideration of the claims as amended.

Applicants believe there are no fees due at this time, however, the Commissioner is hereby authorized to charge any fees necessary or credit any overpayment to Deposit Account No. 50-2148 of Baker Botts L.L.P.

If there are any matters concerning this Application that may be cleared up in a telephone conversation, please contact Applicants' attorney at 512.322.2545.

Respectfully submitted,
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Limited Recognition Under 37 C.F.R. §11.9(b)

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